

### **Abstract**

A method and apparatus is provided that yields improved performance of both single channel and WDM long-distance optical transmission systems by synchronously modulating of the transmitted signal's amplitude. An amplitude modulator receives an optical signal onto which data has been modulated at a predetermined frequency. The modulator re-modulates the amplitude of the optical signal in a continues fashion with a waveform that is periodic, whose fundamental frequency is equal to the same predetermined frequency at which the data is modulated onto the optical signal. The resulting signal (which is neither a pure NRZ or RZ signal) is more tolerant to the distortions usually found in lightwave transmission systems, thus giving superior transmission performance.